



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/611,562	07/07/00	KOBAYASHI	JCLA6244

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QM02/0326

EXAMINER

DUONG, T

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 03/26/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/611,562

Applicant(s)

KOBAYASHI ET AL.

Examiner

Tho V Duong

Art Unit

3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

Figures 3, 4A and 4B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

The drawings are objected to under 37 CFR 1.83(a) because they fail to show the variables such as Ws, Wr and N as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed subject matter of "a heat exchanger in which... a configuration so as to satisfy the correlation expressed by the following numerical formula..." does not enable one skill in the art to make and/or use the invention.

Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed subject matter of "for a given slit array the slit formed on either edge of a heat transfer fin is partitioned into slits of different length..." is not supported in the drawings. Figure 1 discloses that there are two slits of different length are present near the edges of the heat transfer fin. However, the disclosure does not show that these two slits are formed from one slit being partitioned into.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As regards claim 1, the claimed subject matter of the numerical expression is not understood since it is an incomplete expression and variables such as  $W_s$ ,  $W_f$ ,  $N$  are not illustrated in the figures.

As regards claim 5, the examiner does not understand the claimed subject matter of "... the position at which the slit is partitioned is staggered on each of the two edges of the heat transfer fin".

Claim 2 recites the limitation "the width of each slit" in line 4 and "the diameter" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 3 recites the limitation "the spacing" in line 3-4 and "the diameter" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "the width of each slit" in line 3; "the diameter" in lines 5, 6 and "the spacing" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 recites the limitation "the plural number of slit arrays" in line 4; "the slit" in lines 4, 6 and "the position" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claims 2-5 are further rejected in the following paragraphs as best understood by the examiner.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 2-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Yu (US 5,553,663). Yu discloses (Figures 1 and 4) a heat exchanger in which heat transfer coils (102) penetrate through a row of multiple plate shaped heat transfer fins (100) in which air (A) is supplied orthogonally to the coils. Yu further discloses (Figure 6) a modified

Art Unit: 3743

plate shaped heat transfer fins (1) that has slits (11-14) formed thereon. Yu further discloses (Figure 9) the dimensional relationship between the width of each slit and the spacing between slits to the diameter of the heat transfer tube (2). Basing on the geometrical relationship within the figure 9, the width of the slit are about the same as the spacing between two slit and both of them are approximately 0.25 times the diameter of the heat transfer tube (2).

Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Aoyagi et al. (US 4,907,646). Aoyagi discloses (figure 1) a heat exchanger in which heat transfer coils (2) penetrate through a row of multiple plate shaped heat transfer fins (1) in which air (arrow) is supplied orthogonally to the coils. Aoyagi further discloses (Figure 5) a modified plate shaped heat transfer fin (1) that has a plurality of slit arrays formed there on. Aoyagi further discloses that at a given slit array, slits (31, 32) are in different length on one edge of the fin and slits (31,32) are in staggered relationship with slits (35) on the other edge of the fin.

### ***Conclusion***

The non application of art against claim 1 should not be construed as an indication that the claim contains allowable subject matter.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Motegi et al. (US 6,142,220) discloses a finned heat exchanger that shows the slit's dimensions such as width and spacing between the slits.

Kim (US 5,706,885) discloses a finned heat exchanger that shows slits on either edge of the fin are made of different length.

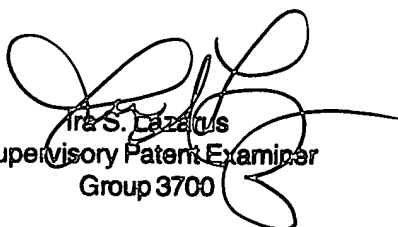
Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tho Duong whose telephone number is (703)305-0768. The examiner can normally be reached on from 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira Lazarus, can be reached on (703)308-1935. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7764.

Any inquiry of a general nature or relating to status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0861.

Tho Duong

March 16, 2001

  
Ira S. Lazarus  
Supervisory Patent Examiner  
Group 3700